

AAMA Comments on EPA's
Tier 2 Study White Paper

April 23, 1997

presented by:
Gerald A. Esper

Introduction

- Extremely short notice given for such a major undertaking
 - Issues affect our business, customers and dealers
 - Issues are technically complex
 - Today's comments are preliminary
 - Additional discussions requested

Introduction

- Air is getting cleaner
 - EPA agrees
 - Federal Tier 1 reductions (96% HC, 96%CO, 90% NO_x)
 - Other Vehicle Emission reduction programs (Enhanced Evap, Cold CO, OBD)
 - Further benefits will be realized (SFTP, ORVR)

Introduction

- Emission benefits from the 1990 CAAA are in their infancy.
 - fleet turnover / phase-ins
 - full impact yet to be realized

Introduction

- National LEV Program
 - California LEV vehicles nationwide in 2001
 - Voluntary emission reductions (HC - 99%, NO_X - 95%)
 - Industry leadership continues
 - Strong industry support
 - Emissions reduction sooner and more cost-effectively than Tier 2
 - Industry recommends NLEV becoming the Tier 2 standards

Introduction

- Accurate and comprehensive modeling (emissions and air quality) is one of the most difficult and important issues that EPA will face during the Tier 2 study.
- Tier 2 study requires up-to-date, accurate and comprehensive modeling.
 - Appropriate assessment of air quality need and emission reductions are critical.
 - Current tools available are not sufficient.
- Tier 2 study must evaluate fuels and vehicles as a system.

Scope of Tier 2 Study

- White paper goes beyond the scope of the CAA.
 - CAA requires EPA to study NMHC, NOx and CO exhaust standards and useful life periods for gasoline and diesel-fueled LDVs and LDTs ≤ 3750 LVW.
 - CAA requires report to Congress by June 1, 1997.
- Given these Congressional requirements, EPA should only consider those issues specifically identified in the CAA.
- PM standards, evaporative requirements, standards for trucks > 3750 LVW and SFTP standards are not identified in the CAA and should not be included in the study.

Scope of Tier 2 Study

- The CAA requires EPA to determine if further vehicle emission reductions are needed.
- White Paper presupposes that these reductions are necessary.
- Tier 1 standards and commercially available fuel must be starting point of study.

Scope of Tier 2 Study

- CAA requires EPA to address feasibility and cost-effectiveness of stationary and other emission source categories in relation to vehicle emission reductions.
- EPA needs to add a section to the white paper on this topic.

Air Quality Analysis

- EPA must examine the need for further reductions by:
 1. Determining non-attainment areas
 2. Establishing reductions necessary for attainment
 3. Evaluating cost-effectiveness of reductions from alternative source categories relative to vehicles
- Existing tools and air quality assessments are not adequate to fulfill these tasks. This must be corrected.
- Separate discussions are required on air quality and emission modeling.
- Study should consider FACA inputs that are relevant to the Tier 2 process.

Air Quality Analysis

- Limitations of existing tools and air quality assessments
 1. Current emission models do not provide credit for existing components of the vehicle emission control program
 - SFTP, OBD, enhanced evap
 - 100K Tier 1 useful life standards
 - Actual (lower) Tier 0 and Tier 1 deterioration rates

Air Quality Analysis

2. Modeling must be appropriate for local, non-attainment areas.
 - OTAG addresses transport and needs to be followed by modeling using a finer grid resolution.
 - OTAG modeling may be biased toward NO_x control.
3. Final SIPs are not available.
 - SIPs identify reductions necessary and methods by which to achieve reductions.
 - Congress anticipated this information would be available during time frame of study.

Air Quality Analysis

4. The ozone and PM modeling in support of the Regulatory Impact Analysis for the proposed ozone and PM 2.5 standards is inadequate.
 - The ROM model has too coarse a grid structure to determine the relative need for VOC and NO_x control for attaining the ozone standard.
 - The PM model lacks the chemistry and physics to model the important processes that determine secondary particulate formation in the atmosphere.

Air Quality Issues

- Time frame for evaluating air quality need should be 2007.
 - Significant database exists
 - Latest 49 State attainment deadline is 2007.
- Revisions to the CO standards are not necessary.
 - EPA states that “the recent trend in air quality with respect to CO has been very encouraging”
 - The number of CO non-attainment areas have decreased significantly.

Air Quality Issues

- Particulate emissions from light-duty vehicles
 - We agree with EPA that LDVs and LDTs are not “large contributors to PM emission inventory”
 - We have submitted data showing a 99% reduction from pre-control gasoline LDVs and LDTs.

Baseline Assessment

- Tier 1 standards and commercial fuels must be the starting point of the study.
- Many Tier 1 programs are still in the implementation stage and vehicles have relatively low mileage.
- Any other starting point presupposes that further reductions are needed.
- NLEV represents California LEV technology nationwide in 2001 MY. Such technology goes beyond current Federal requirements and should not be the baseline.

Baseline Assessment

- The white paper portrays LEV technology as being further along than it is.
 - First LEVs recently started production
 - Limited data, experience and mileage
 - No real world in-use experience, especially on non-California fuels

HC versus NOx Control

- Additional discussions are required.
- Issue is very complex because of non-linear ozone formation chemistry.
 - EPA states that for ozone “there is added complexity that light-duty motor vehicle regulations control ozone precursor emissions and not ozone directly”.
 - This situation is further complicated in that even a reduction in precursors may not necessarily decrease ozone.
 - Precursor reductions have been shown to result in a mixed bag of ozone reductions/increases, depending upon pre-existing chemistry.

HC versus NO_x Control

- Need to focus on non-attainment areas to establish the effectiveness of HC versus NO_x control
 - OTAG modeling focuses on transport and may over-predict NO_x control benefits (over-predict isoprene).
 - Regional models do not address non-attainment areas because grid size resolution is not sensitive enough to remove NO_x bias.

HC versus NOx Control

- The implementation concepts being considered in the FACA process should be considered in the study.
 - many of the issues may be pertinent to the Tier 2 study
 - transport findings may reduce need for more stringent vehicle standards because less pollution will enter areas of violation due to focus on source controls in areas of influence

HC versus NO_x Control

- Additional photochemical modeling will be required for the Tier 2 study.
- EPA should evaluate the need for Tier 2 standards with both regional and SIP-quality urban scale modeling to assure the relative importance of HC versus NO_x reductions is properly evaluated.

Costs/Benefit of Emission Technology

- Must be compared to the cost-effectiveness of stationary and other source categories.
- Given significant reductions have already been achieved from vehicles (HC - 96%, CO - 96%, NO_X - 90%)
 - Incremental benefits are minuscule while costs have become quite large.
 - Marginal cost-effectiveness is enormous.

Cost/Benefit of Emission Technology

- The white paper appears to imply reliance on California LEV program data. The study should rely on other sources.
 - The Sierra Research Study is the most recent, comprehensive study on this issue
- The baselines for cost-effectiveness calculations should be Tier 1 vehicles and industry average gasoline. This approach will allow EPA to fairly compare the costs and benefits of various fuel and vehicle control options, as a system.

Light Truck Standards

- Revision to standards for LDTs >3750 L VW are outside of the scope of the Tier 2 study.
- The CAA clearly differentiates standards for trucks
 - Trucks have a different function than cars
 - LDTs haul and tow loads and are designed accordingly
 - Customers buy trucks for this functionality
 - LDTs need power and performance to perform work besides carrying passengers

Harmonization

- It is important that the setting of standards be analyzed in the context of air quality needs and sound science.
- AAMA supports harmonization of test procedures and test fuels where efficiencies can be gained.

Heavy-Duty Vehicles

- We support EPA's position not to include heavy-duty vehicles in the Tier 2 study
 - These vehicles are being addressed in separate regulations.
 - Trucks $>3750\text{ L}VW$ are outside of the scope of the Tier 2 study.

Certification Fuel

- Vehicles and fuels must be considered a single system.
- The white paper presupposes that the detrimental effect of sulfur on emission should be addressed through changes to the certification fuel.

Certification Fuel

- The direction should be to reduce commercial fuel sulfur levels.
 - sulfur has been demonstrated to significantly reduce catalyst efficiencies, especially NO_x
 - reduced sulfur levels allow vehicles to achieve optimal emission benefit
 - reduced sulfur levels provide immediate emission improvements across entire fleet
- Any change to certification fuel would require a CAFE adjustment.

Diesel Engine Exemptions

- Diesel standards for LDTs >3750 LVW are beyond the scope of the Tier 2 study.
- NOx diesel provisions should not be revised.
 - These provisions are based on technical limitations of diesel technology.
 - Fuel economy benefits could be jeopardized.
 - HC and CO₂ emission benefits could be jeopardized.
 - Upcoming European legislation recognizes limitations of diesel NOx technology.

Particulate Emissions

- PM standards are beyond the scope of the Tier 2 study.
- We agree with EPA that LDVs and LDTs are not “large contributors to PM emission inventory.”
- We have submitted data showing a 99% reduction from pre-controlled gasoline LDVs and LDTs

Particulate Emissions

- AAAMA and others have demonstrated the lack of science available to assess particulate health impacts.
 - recent epidemiological studies do not substantiate EPA's claims that particulates (PM 2.5 or PM 10) are a major health concern
 - the science is in research phase
 - unknown which aspects (if any) of particulate emission are critical
 - EPA and CASAC agree that more research is needed

Particulate Emissions

- AAMA and others have previously submitted comments to EPA on its proposed rule for the PM NAAQS reflecting our positions on PM.

Supplemental Federal Test Procedure Standards

- Benefits attributable to SFTP should be included in the emissions analysis.
- SFTP standard revision is outside of the scope of the Tier 2 study.
- SFTP standards were recently finalized by EPA
 - based on assessment of future technology
 - examined over an extended time frame
 - phase-in extended until the 2004 MY
- Further revisions to the SFTP standards should be dropped from consideration of the study.

Alternative Fuel Vehicles

- The most technically sound way to address alternative fuel standards is to use fuel neutral standards based on reactivity adjusted emissions.

Enhanced Evaporative Emissions

- Benefits attributable to enhanced evaporative standards should be included in the emissions analysis.
- Revisions to evaporative emission standards are outside of the scope of the Tier 2 study.

Durability/Useful Life

- Minimal benefit to extending useful life standards
 - Recent data shows lower deterioration for Tier 0 and Tier 1 vehicles
 - Low VMT at higher mileage
 - OBD-II works for entire life of vehicle
- Maintenance, owner behavior and in-use fuels are critical to lifetime vehicle emissions. EPA must place emphasis on these factors.
- Further extension of useful life can not currently be accurately accounted for in modeling. In fact, current modeling for Tier 1 vehicles does not even properly account for 100K useful life standards.

Sulfur Impact on Emission Performance

- Vehicles and fuels must be considered a system
- The direction should be to reduce commercial fuel sulfur levels
 - sulfur has been demonstrated to significantly reduce catalyst efficiencies, especially for NO_x
 - reduced sulfur levels allow vehicles to achieve optimal emission benefit
 - reduced sulfur levels provide immediate emission improvements across entire fleet

Sulfur Impact on Emission Performance

- I/M and OBD implications should be addressed in addition to the emission impacts
- Overall fuel formulation should also be investigated to optimize vehicle emissions

Sulfur Impact on Emission Performance

- EPA's OBD White Paper agrees with the detrimental impact of fuel sulfur levels on emissions
 - “Gasoline sulfur clearly causes emissions to increase...”
 - “Sulfur’s impact on LEVs is greater than its impact on Tier 0 and Tier 1 vehicles”
 - “...supplemental FTP requirements could exacerbate the effect of sulfur on LEVs.”

Sulfur Impact on Emission Performance

- Any cost-effectiveness analysis should look at various combinations of vehicle technology and fuel sulfur levels. Baselines for cost effectiveness should be Federal Tier 1 vehicles and average commercial fuel.
- Various fuel/vehicles strategies should be compared to stationary and other source category options to find the best overall combination of strategies.

Conclusions

- Air is getting cleaner. EPA should not presuppose that further vehicle emission reduction is required.
- AAMA continues to support the NLEV program.
- NLEV will provide emission reduction sooner and in a more cost-effective manner than mandated Tier 2 standards.
- The White Paper goes beyond the scope of the CAA.

Conclusions

- Air quality and emission models are not adequate at this time and must be updated and properly applied.
- The baseline for cost-effectiveness must be Tier 1 and commercially available fuel.
- Vehicles and fuels must be considered a system.
- Cost/benefit of changes to the fuel/vehicle system must be compared to cost/benefit of other control options.